

REMARKS

Amendments to claims 1, 15, 24, 34, 40, 49, and 58 are for the purpose of clarifying what Applicant regards as the claimed invention. No new matter has been added.

Applicant wishes to thank the Examiner for withdrawing the § 112 rejections, and the § 103 rejections based on Kaufman and Takeo.

I. Claim Rejections under 35 U.S.C. § 101

Claims 1-9, 15-23, 24-29, 31-33, 40-48, 49-51, 53, 54, 58-64, and 66 stand rejected under 35 U.S.C. § 101. Claims 1, 15, 24, 40, 49, and 58 recite a “processor” that is used to perform at least part of the claimed process/method, thereby tying the claimed subject matter to a statutory class. Applicant respectfully notes that contrary to the Office Action’s characterization of the claims (i.e., that the term “processor” is only in the preamble), the limitation “processor” is actually recited in the claim body.

Also, in accordance with the Examiner’s recommendation, claims 1, 15, 24, 40, 49, and 58 have been amended to recite an apparatus (i.e., “imaging device”) that generates the image. Therefore, the claimed subject matter is clearly tied to a statutory class.

Furthermore, Applicant submits that “performing a medical procedure” as described in claims 24 and 40, and “gating a medical procedure” as described in claims 1, 15, 49, and 58, result in physical transformations in the real world.

Thus Applicant respectfully requests that the § 101 rejection be withdrawn with respect to these claims and their respective dependent claims.

II. Double Patenting Rejections

Claims 1-29 and 31-63 stand provisionally rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 1-4 and 7-63 of copending U.S. Patent Application No. 10/656,478.

Claims 1-29 and 31-63 stand provisionally rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 33-43 and 44-49 of copending U.S. Patent Application No. 10/678,741.

Claims 1-29 and 31-63 stand rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 1-27 of U.S. Patent No. 6,959,266.

Claims 1-29 and 31-63 stand rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 1-48 of U.S. Patent No. 6,937,696.

Claims 1-29 and 31-63 stand rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 1-28 of U.S. Patent No. 6,621,889.

Applicant herein submits terminal disclaimers to overcome any actual and/or provisional rejections based on the above cited references. The filing of the terminal disclaimers is accompanied with a Power of Attorney, thereby addressing the issue raised in the Office Action. Thus, Applicant respectfully requests that the double patenting rejections be withdrawn.

III. Claim Rejections under 35 U.S.C. § 103 based on Kaufman, Takeo, and Kalend

Claims 1-23 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 7,006,862 (Kaufman) in view of U.S. Patent No. 6,125,166 (Takeo) and U.S. Patent No. 5,784,431 (Kalend).

A. Claims 1, 10, and 15

Claim 1 recites gating a medical procedure *based at least in part on the first composite image*, wherein the act of gating the medical procedure is performed in *real time* (Emphasis Added). Claims 10 and 15 recite similar limitations. Applicant certainly agrees with the Examiner that Kaufman and Takeo do not disclose the above limitations. According to pages 3-4 of the Office Action, column 3, line 67 to column 4, line 3 of Kalend allegedly disclose the above limitations, and it would have been allegedly obvious to gate the radiation procedure in the system of Kaufman based on composite image in real time “such that the radiation is directed to the target site.” Applicant respectfully traverses.

Both Kaufman and Takeo are directed to imaging techniques for diagnostic purposes, and therefore, the methods of Kaufman and Takeo clearly do not require targeting of radiation to direct radiation to a specific target site. Thus, the alleged reason of directing radiation to a target site cannot be the proper motivation to combine the references, and there is no reason to combine the feature of Kalend with the methods of Kaufman and Takeo, and certainly not in the manner purported in the Office Action.

Also, Applicant respectfully notes that Kaufman discloses determining a composite image, which is used to determine calcium detection or 3-D rendering (see abstract and c8:15-16). Notably, the calcium detection and the 3-D rendering do not involve any *gating*, and the calcium detection and 3-D rendering described in Kaufman are actually performed

retrospectively - i.e., long after the projection images are obtained (see also, title, c4:46-48, and c14:65). Similarly, Takeo discloses a method of forming an energy subtraction image, which is used for diagnosis of an illness (c3:47-54), and not for gating a medical procedure. In Takeo, the procedure for diagnosis of the illness is performed long after the image is obtained. Thus, the methods of Kaufman and Takeo clearly do not involve any gating of a medical procedure in real time, and one skilled in the art would not be motivated to modify the methods of Kaufman and Takeo in the manner purported in the Office Action so that the procedure is gated in real time.

For at least the foregoing reasons, claims 1, 10, and 15, and their respective dependent claims, are believed allowable over Kaufman, Takeo, Kalend, and their combination.

B. No prima facie case of § 103 rejection for dependent claims 2-9, 11-14, 16-23, and 64-66

Applicant notes that the Office Action did not specifically identify where the elements of the dependent claims 2-9, 11-14, 16-23, and 64-66 are found, and did not provide a motivation to combine Takeo with Kaufman with respect to these elements. Under the ruling of the Supreme Court in *KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007), the element being combined must be known, and that there must be a motivation to combine such element.

Also, Applicant respectfully submits that a general statement that the features in the dependent claims are taught in the references or are considered to be obvious cannot sustain a prima facie case of the § 103 rejections. Rather, the specific feature being relied upon must be specifically identified in the reference, and the rejection must identify a motivation/reason to combine such feature with the disclosure of other cited reference(s).

Further, Applicant has requested in the last response that the Examiner identify where the elements of the dependent claims are found, and provide any basis for the alleged motivation for

the purported combination of references. However, Applicant respectfully notes that the requested information for establishing the prima facie case of the § 103 rejection have not yet been provided in the Office Action.

Thus, Applicant respectfully submits that a prima facie case of the § 103 rejection has not been established for *each* of the above dependent claims, and requests that the § 103 rejection for these claims be withdrawn.

IV. Claim Rejections under 35 U.S.C. § 103 based on Kaufman, Takeo, Kalend, and Fitzgerald

Claims 24-29 and 32-66 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kaufman in view of Takeo and Kalend, and further in view of U.S. Patent Application Publication 2005/0027196 (Fitzgerald).

A. Claims 24, 34, and 40

Claim 24 recites *a plurality of templates for treating a patient*, each of the templates having an image and treatment data, wherein the treatment data comprises one or more parameters for controlling an operation of a radiation machine, and wherein *each of the plurality of templates corresponds to a phase of a physiological cycle* (Emphasis Added). Claims 34 and 40 recite similar limitations. Kaufman, Takeo, and Kalend do not disclose or suggest a plurality of templates for treating a patient, each of which having an image and treatment data, and corresponding to a phase of a physiological cycle.

According to the Office Action, paragraphs 12 and 23 of Fitzgerald allegedly disclose “treatment planning records,” which the Examiner considers to be the claimed “templates.”

However, Applicant notes that the information in the “treatment planning record” are in fact for documenting “the radiation a patient received from implant radiation” (see paragraph 23, especially last sentence). Thus, the so-called “treatment planning record” of Fitzgerald clearly does not include treatment data that include one or more parameters for controlling an operation of a radiation machine, as described in claims 24, 34, and 40. Applicant notes that the above arguments were presented previously, but do not appear to have been considered and addressed in the current Office Action.

In addition, Applicant respectfully notes that paragraph 23 of Fitzgerald does not disclose multiple templates for treating a patient, wherein each template corresponds to a phase of a physiological cycle. Rather, paragraph 23 of Fitzgerald describes a (i.e., one) treatment plan.

Also, according to page 5 of the Office Action, Kalend discloses adjustment of more than one parameter related to radiation treatment, which the Office Action analogizes as the claimed “parameters for controlling an operation of a radiation machine.” However, Applicant respectfully notes that Kalend does not disclose or suggest that such parameters be parts of different respective templates (i.e., multiple templates that corresponds to different phases of a physiological cycle) to treat a patient, as described in the claims.

Since none of the cited references discloses or suggests the above limitations, any purported combination of the cited references cannot result in the subject matter of claims 24, 34, and 40. For at least the foregoing reasons, claims 24, 34, and 40, and their respective dependent claims, are believed allowable over Kaufman, Takeo, Kalend, Fitzgerald, and their combination.

B. Claims 49, 55, and 58

Claim 49 recites registering the input image with the template, wherein the registering comprises selecting the template *from a plurality of templates that best matches an image in the input image* (Emphasis Added). Claims 55 and 58 recite similar limitations. None of the cited references discloses or suggests such limitations. Thus, any purported combination of the cited references cannot result in the subject matter of claims 49, 55, and 58.

According to page 5 of the Office Action, Kaufman inherently discloses template matching because such may be inferred from the monitoring of duration of the R-R cycle as described in column 11, lines 33-43 of Kaufman. However, the cited passage of Kaufman actually describes including certain image datasets into a projection reconstruction. There is nothing in the cited passage of Kaufman that discloses or suggests matching one of a plurality of templates to an image in an input image. Notably, the inclusion of the image datasets in Kaufman is based on a selection of “an absolute time before or after the R-wave,” not based on a matching of images. Thus, to the extent that the inclusion of an image dataset in Kaufman is analogized as template matching (which is incorrect as discussed), Applicant respectfully notes that such inclusion of image dataset is not based on a best match to an image in an input image.

For at least the foregoing reasons, claims 49, 55, and 48, and their respective dependent claims, are believed allowable over Kaufman, Takeo, Kalend, Fitzgerald, and their combination.

C. No prima facie case of § 103 rejection for dependent claims 25-29, 31-33, 35-39, 41-48, 50-51, 53-54, 57, 59-60, and 62-66

Applicant notes that the Office Action did not specifically identify where the elements of the dependent claims 25-29, 31-33, 35-39, 41-48, 50-51, 53-54, 57, 59-60, and 62-66 are

purportedly found, and did not provide a motivation to combine Takeo and Fitzgerald with Kaufman with respect to these elements. Under the ruling of the Supreme Court in *KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007), the element being combined must be known, and that there must be a motivation to combine such element.

Also, Applicant respectfully submits that a general statement that the features in the dependent claims are taught in the references or are considered to be obvious cannot sustain a prima facie case of the § 103 rejections. Rather, the specific feature being relied upon must be specifically identified in the reference, and the rejection must identify a motivation/reason to combine such feature with the disclosure of other cited reference(s).

Further, Applicant has requested in the last response that the Examiner identify where the elements of the dependent claims are found, and provide any basis for the alleged motivation for the purported combination of references. However, Applicant respectfully notes that the requested information for establishing the prima facie case of the § 103 rejection have not yet been provided in the Office Action.

Thus, Applicant respectfully submits that a prima facie case of the § 103 rejection has not been established for *each* of the above dependent claims, and requests that the § 103 rejection for these claims be withdrawn.

V. Claim Rejections under 35 U.S.C. § 103 based on Kaufman, Takeo, Kalend and Verard

Claims 49-66 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kaufman in view of Takeo and Kalend, and further in view of U.S. Patent Application Publication 2004/0097805 (Verard).

A. Claims 49, 55, and 58

Claim 49 recites registering the input image with the template, wherein the registering comprises selecting the template *from a plurality of templates that best matches an image in the input image* (Emphasis Added). Claims 55 and 58 recite similar limitations. Kaufman, Takeo, and Kalend do not disclose or suggest such limitations.

According to page 6 of the Office Action, paragraphs 112, 132, and 146 of Verard allegedly disclose the above limitations. However, Applicant respectfully notes that paragraph 112 of Verard describes superimposing templates over images to provide a map for steering a catheter. Paragraph 132 of Verard describes acquiring previous patient information to obtain an atlas template, and using such atlas template to determine an optimal site and path for lead placement. Paragraph 146 of Verard describes templates that identify effective ablation zone, wherein such templates may be superimposed over an image to identify target area. Notably, none of the cited paragraphs 112, 132, 146 of Verard actually discloses or suggests any selection of a template *that best matches an image* in an input image, as described in the claims.

Since none of the cited references, either alone or in combination, discloses or suggests the above limitations, any purported combination of the cited references cannot result in the subject matter of claims 49, 55, and 58. For at least the foregoing reasons, claims 49, 55, and 48, and their respective dependent claims, are believed allowable over Kaufman, Takeo, Kalend, Verard, and their combination.

B. No prima facie case of § 103 rejection for dependent claims 50-51, 53-54, 57, 59-60, and 62-66

Applicant notes that the Office Action did not specifically identify where the elements of the dependent claims 50-51, 53-54, 57, 59-60, and 62-66 are found, and did not provide a motivation to combine Takeo and Verard with Kaufman with respect to these elements. Under the ruling of the Supreme Court in *KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007), the element being combined must be known, and that there must be a motivation to combine such element.

Also, Applicant respectfully submits that a general statement that the features in the dependent claims are taught in the references or are considered to be obvious cannot sustain a prima facie case of the § 103 rejections. Rather, the specific feature being relied upon must be specifically identified in the reference, and the rejection must identify a motivation/reason to combine such feature with the disclosure of other cited reference(s).

Further, Applicant has requested in the last response that the Examiner identify where the elements of the dependent claims are found, and provide any basis for the alleged motivation for the purported combination of references. However, Applicant respectfully notes that the requested information for establishing the prima facie case of the § 103 rejection have not yet been provided in the Office Action.

Thus, Applicant respectfully submits that a prima facie case of the § 103 rejection has not been established for *each* of the above dependent claims, and requests that the § 103 rejection for these claims be withdrawn.

VI. Claim Rejections under 35 U.S.C. § 103 based on Takai

Claims 1-23 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 7,221,733 (Takai) in view of Takeo. Claims 24-29 and 32-66 stand rejected

under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takai in view of Takeo and Fitzgerald. Claims 49-66 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takai in view of Takeo and Verard.

Applicant respectfully notes that Takai was filed on January 2, 2002, which is before the filing date (September 5, 2003) of the subject application, and was published on May 22, 2007. Thus, Takai is a 102(e) prior art to the subject application. Takai is assigned on its face to Varian Medical Systems Technologies, Inc., which is a subsidiary of Varian Medical Systems, Inc. Thus, the subject matter of Takai and the claimed invention were, at the time the claimed invention was made, owned directly or indirectly by the same entity or subject to an obligation of assignment to the same entity. As such, under 35 U.S.C. § 103(c), Takai cannot be combined with other references to preclude the patentability of the subject claims.

For at least the foregoing reasons, Applicant respectfully requests that the § 103 rejections based on Takai be withdrawn.

CONCLUSION

Based on the foregoing remarks, all claims are believed allowable. If the Examiner has any questions or comments regarding this response, the Examiner is respectfully requested to contact the undersigned at the number listed below.

To the extent that any arguments and disclaimers were presented to distinguish prior art, or for other reasons substantially related to patentability, during the prosecution of any and all parent and related application(s)/patent(s), Applicant(s) hereby explicitly retracts and rescinds any and all such arguments and disclaimers, and respectfully requests that the Examiner re-visit the prior art that such arguments and disclaimers were made to avoid.

The Commissioner is authorized to charge any fees due in connection with the filing of this document to Vista IP Law Group's Deposit Account No. **50-1105**, referencing billing number **VM 03-006**. The Commissioner is authorized to credit any overpayment or to charge any underpayment to Vista IP Law Group's Deposit Account No. **50-1105**, referencing billing number **VM 03-006**.

Respectfully submitted,

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